Transesterification of Waste Cooking Oil using Chemically Treated Catalyst

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ABSTRACT

This study presents the potential of a chemically treated cement clinker as the catalyst for biodiesel production. Activation was achieved by means of chemical treatment with either KOH or CH3OH and in some case followed by calcination. The catalysts effects were studied under constant condition by using 1.5 wt.% of catalyst, 5:1 for methanol to oil ratio, at temperature of 60°C and the reaction time of 3 h. The feedstock was waste cooking oil obtained from a local household. Basic strengths and surface morphology of the catalyst were analyzed using Hammett indicators and SEM and their influences to the biodiesel conversion were elucidated. The FAME compositions were analyzed using GC-MS. It was found that the KOH impregnated catalyst without calcination give the highest conversion of FAME (96.8%). The catalyst with high basicity produces higher biodiesel conversion.

KEYWORDS: Transesterification, catalyst, cooking oil, biodiesel

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